OPERATING SUMMARY

VILLAGE OF FRANKFORD

WATER POLLUTION CONTROL PLANT and WATER SUPPLY SYSTEM

1974

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHEASTERN REGION
C.E. McIntyre

MANAGER, UTILITY OPERATIONS
A. Symmonds

FRANKFORD
WATER POLLUTION CONTROL PLANT
and
WATER SUPPLY SYSTEM

Operated on behalf of the

VILLAGE OF FRANKFORD

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

CONTENTS

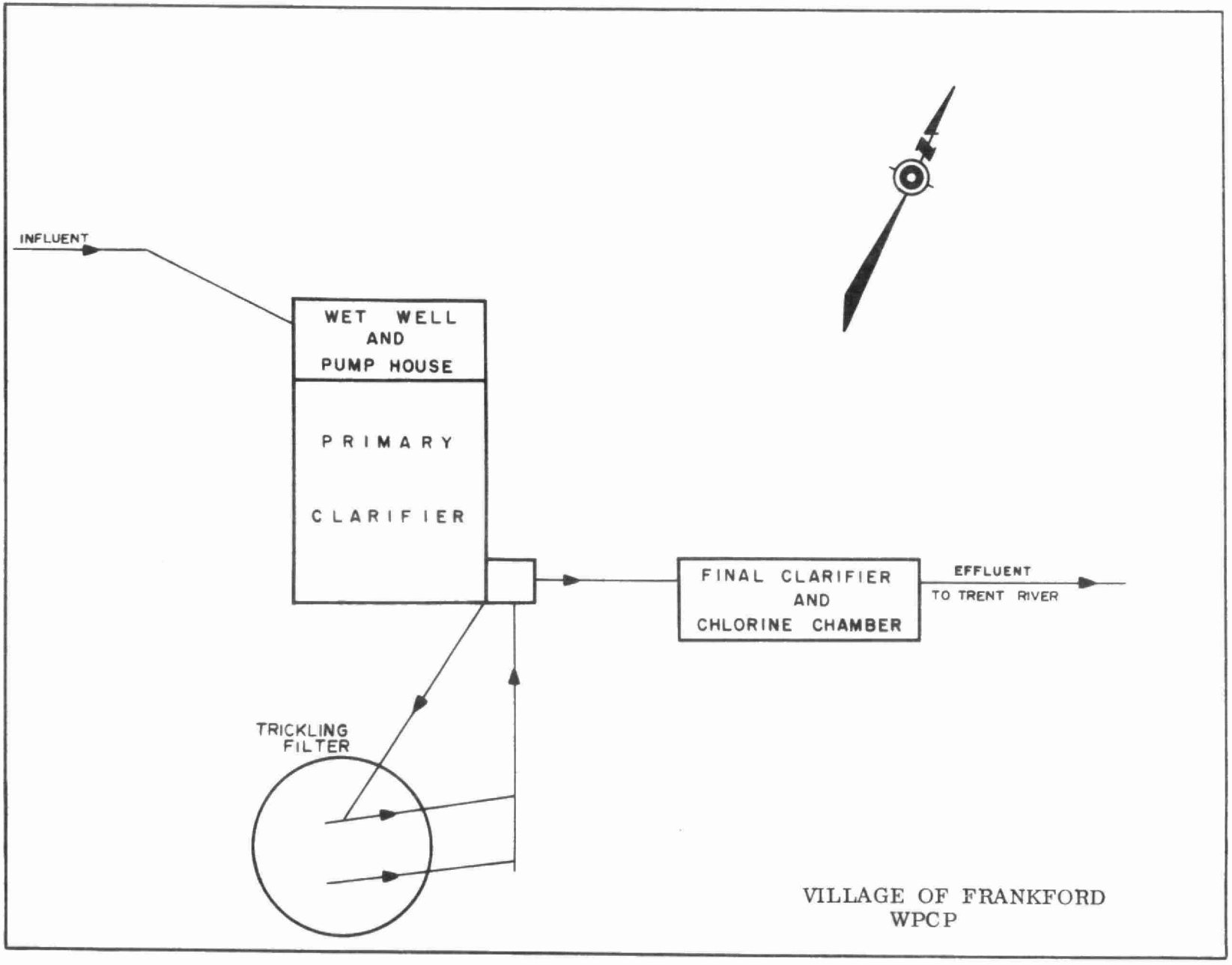
WATER POLLUTION CONTROL PLANT

Flow Diagram 6
Design Data 7
Operating Cost 8
Process Data 10

WATER SUPPLY SYSTEM

Flow Diagram 14
Design Data 15
Operating Cost 16
Process Data 18

WATER POLLUTION CONTROL PLANT


INFLUENT
WET WELL
AND
PUMP HOUSE
PRIMARY
CLARIFIER
FINAL CLARIFIER
AND
CHLORINE CHAMBER
EFFLUENT
TO TRENT RIVER
TRICKLING
FILTER
VILLAGE OF FRANKFORD
WPCP

DESIGN DATA

PROJECT Village of Frankford WPCP

PROJECT NO. 2-0009-57

TREATMENT Trickling Filter

DESIGN FLOW -

Primary	0.54 mgd
Secondary	0.12 mgd

SEWAGE PUMPING STATION

Pumps

1 electric, 0.54 mgd @ 20' tdh
1 gasoline standby 0.54 mgd @ 20' tdh

PRIMARY TREATMENT

Coarse bar screen @ 1" centres

Grit Removal

Type: Manually-cleaned channels
Size: Two 9' x 2' x 1' water depth @ 0.54 mgd
Flow velocity: 0.5 ft/sec

Primary Sedimentation

Size: One 60' x 16' 6" x 7' 5" (46,500 gal)
Retention: 2 hr @ 0.54 mgd
Loading: Surface, 565 gpd/ft^2
Weir, 33,800 gpd/ft

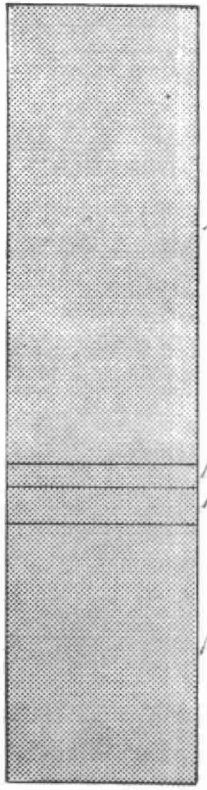
SECONDARY TREATMENT

Type: Trickling filter
Size: One 42' dia x 4' depth
Recirculation: 3.1 through primary
Loading: 1.5 lb BOD/yd^3/day

SECONDARY SEDIMENTATION AND CHLORINATION

Type: Earth-banked pond
Size: One 16' x 40' x 3'
Retention: 2 hr @ 0.12 mgd

ANNUAL COSTS



1974 OPERATING COSTS

SALARIES & WAGES	58%
EMPLOYEE BENEFITS	%
TRANSPORTATION & COMMUNICATIONS	3%
SERVICES	8%
SUPPLIES & EQUIPMENT	31%
AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0%
TRANSFER PAYMENTS	0%
OTHER TRANSACTIONS	0%

YEARLY OPERATING COSTS

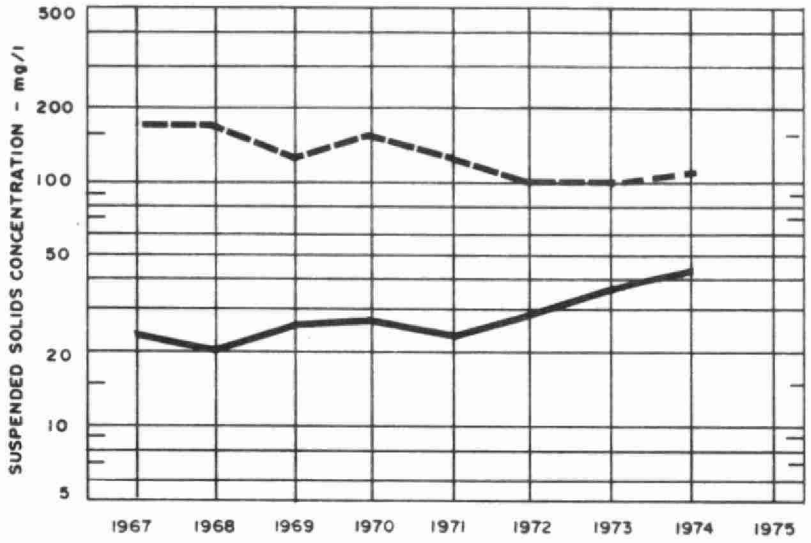
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS $/M.G.	UNIT COSTS ¢/lb BOD
1969	50	9,195.	183	
1970		9,116.		
1971		9,271.		
1972		10,420.		
1973		17,292		
1974		14,473		

OPERATING EXPENDITURES

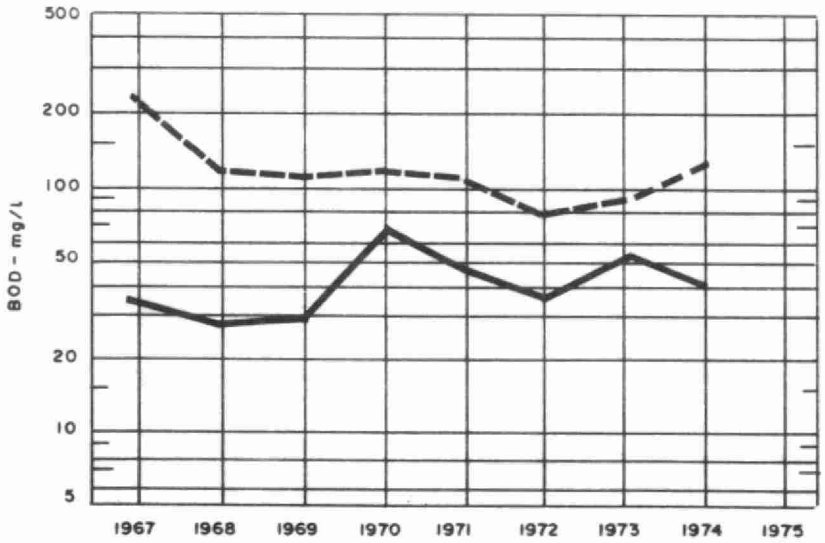
Regular Staff	$ 8363	$
Casual (Unclassified) Staff		
TOTAL SALARIES AND WAGES		8363
TOTAL EMPLOYEE BENEFITS		
TOTAL TRANSPORTATION AND COMMUNICATIONS		397
Insurance	171	
Sludge Haulage		
Repairs and Maintenance	628	
Other Services	414	
TOTAL SERVICES		1213
Machinery and Equipment	144	
Chemicals	2200	
Utilities	1289	
Other Supplies and Equipment	867	
TOTAL SUPPLIES AND EQUIPMENT		4500
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 14473

PROCESS DATA

SUSPENDED SOLIDS VARIATION



BIOCHEMICAL OXYGEN DEMAND VARIATION



PLANT INFLUENT

PLANT EFFLUENT

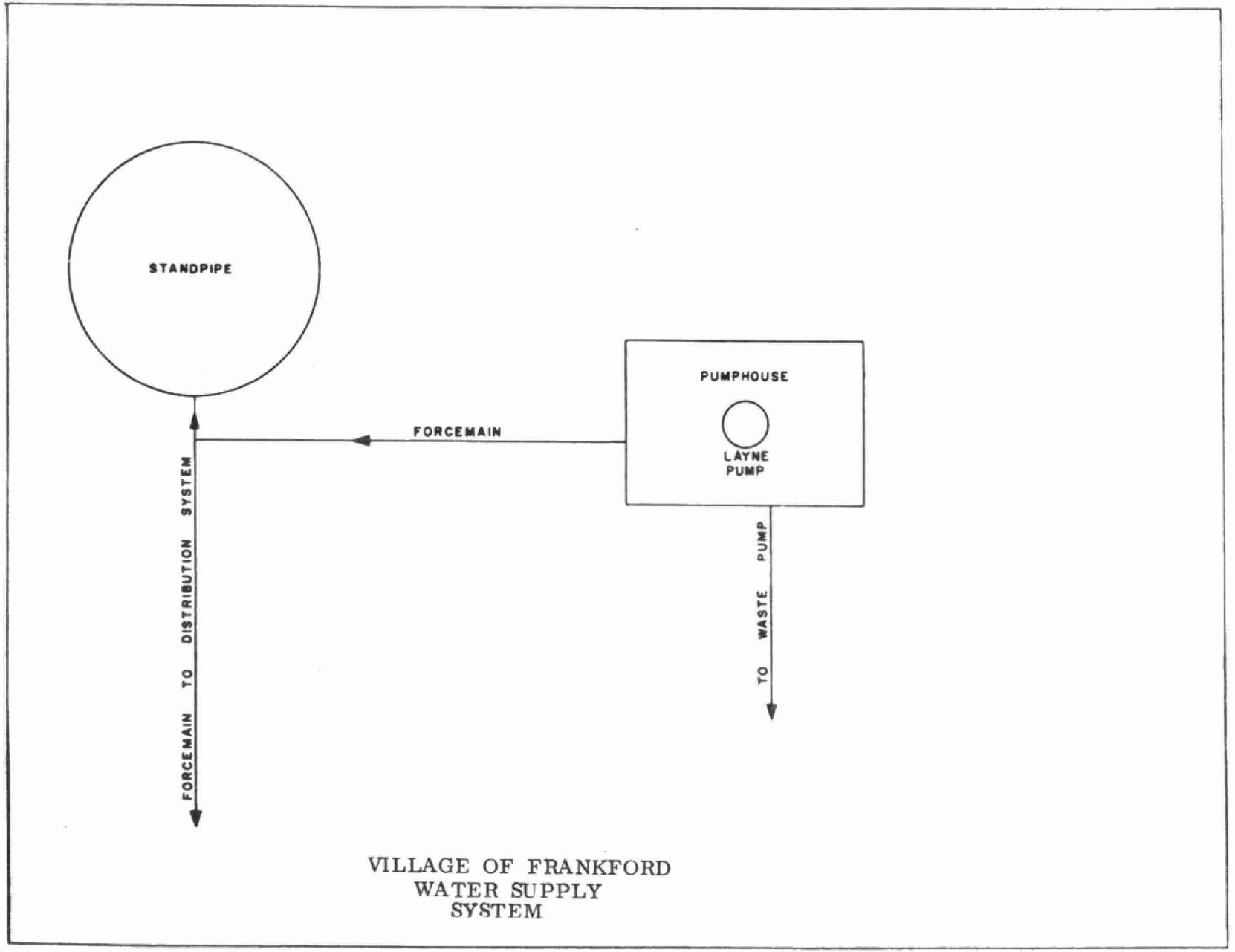
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	5.89	.19	.30	61	48	21	.8	95	55	42	2.3	2.9	3.0
FEB	3.64	.13	.37	115	75	35	1.2	95	65	32	.9	4.7	2.7
MAR	4.47	.14	.26	26	22	15	1.3	40	40	0	0	1.3	2.0
APR	6.20	.21	.27	101	-	-	-	105	-	-	-	2.8	-
MAY	7.00	.23	.35	-	-	-	.9	-	-	-	-	-	-
JUNE	4.33	.14	.22	142	44	69	4.2	105	30	71	3.2	3.4	2.0
JULY	4.34	.14	.31	53	30	43	1.0	108	40	63	3.0	3.8	2.0
AUG	4.29	.14	.18	63	15	76	2.1	90	30	67	2.6	4.0	2.3
SEPT	3.82	.13	.19	212	21	90	7.3	228	27	88	7.7	3.9	2.2
OCT	4.55	.15	.22	124	70	44	2.4	122	40	67	3.7	4.3	2.4
NOV	4.96	.16	.22	230	22	90	10.3	100	40	60	3.0	2.6	2.3
DEC	6.68	.22	.32	275	-	-	-	90	40	56	3.3	4.5	1.5
TOTAL	60.17	-	-	-	-	-		-	-	-		-	-
AVG.		.16	MAXIMUM .37	122	41	66	4.1	122	42	66	4.0	3.7	2.4
No. of Samples	-	-	-	24	15	-	-	24	16	-	-	24	22

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	-	206	3.2	43	70				10.0	6.4						60
FEB	-	189	5.0	72	75				-	9.3						-
MAR	8	195	4.4	32	40				10.6	-						63
APR	-	191	3.1	35	20				32.2	3.1						191
MAY	-	201	2.9	31	40				24.3	-						144
JUNE	-	229	5.3	48	20				16.7	7.6						99
JULY	-	141	3.2	31	40				16.7	8.9						99
AUG	-	128	3.0	26	40				3.0	9.0						18
SEPT	-	187	4.9	100	60				15.8	9.1						94
OCT	-	210	4.6	60	55				20.2	5.9						120
NOV	-	207	4.2	120	70				4.5	-						27
DEC	-	208	3.1	-	45				12.1	5.9						72
TOTAL	8	2292	-	-	-	-	-	-	166.3	-	-		-	-	-	987
AVG.	.13 cu. ft/mil gal	191	3.9	54	49				-	7.2						82

WATER SUPPLY SYSTEM



VILLAGE OF FRANKFORD
WATER SUPPLY
SYSTEM

PROJECT Village of Frankford WSS

PROJECT No. 6-0002-57

SOURCE

One well

TREATMENT

None

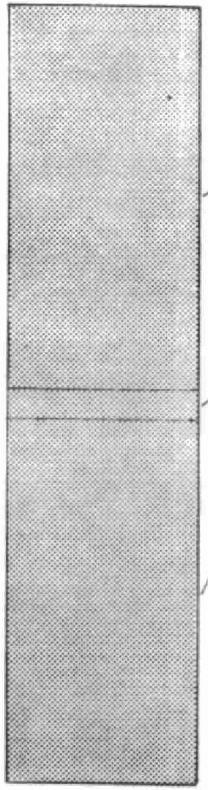
PUMPS

Type: Layne vertical turbine
Size: One 300 gpm (0.43 mgd)
Standby: none

STORAGE

One 115,000 gal steel standpipe

ANNUAL COSTS



1974 OPERATING COSTS

- SALARIES & WAGES 48 %
- EMPLOYEE BENEFITS
- TRANSPORTATION & COMMUNICATIONS
- SERVICES 4 %
- SUPPLIES & EQUIPMENT 48 %
- AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS
- TRANSFER PAYMENTS
- OTHER TRANSACTIONS

YEARLY OPERATING COSTS

YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS cents per 1000 gal
1969	32.6	3,252	10
1970	37.8	3.138	8
1971	44.5	9,272	13
1972	54.0	4,212	14
1973	47.9	5,711	12
1974	48.3	9,702	20

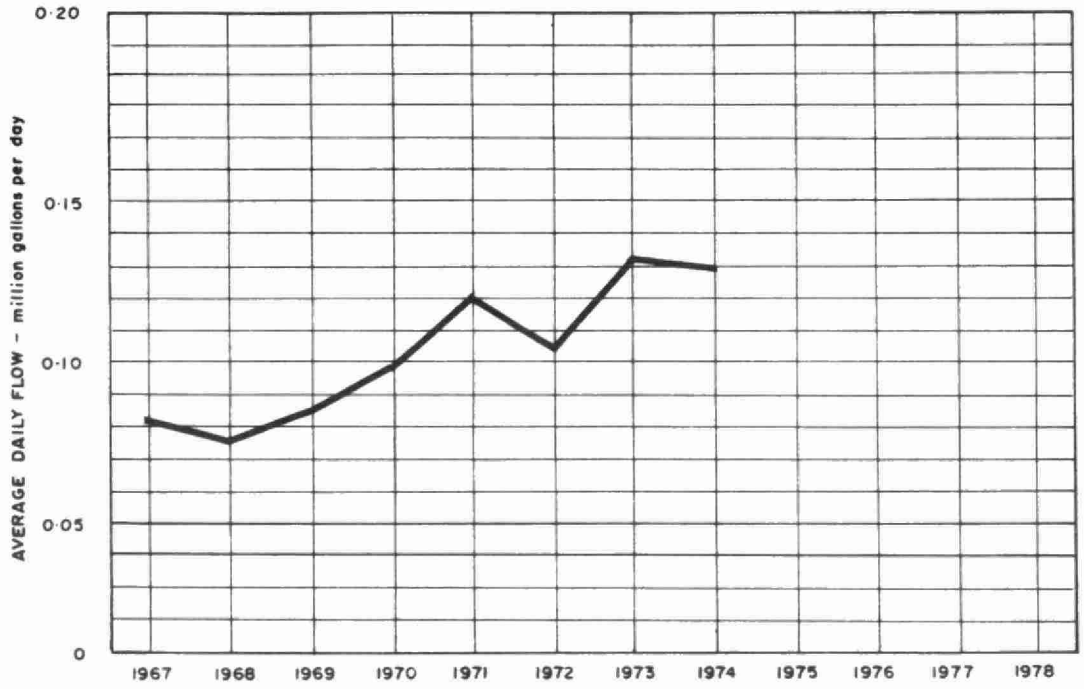
OPERATING EXPENDITURES

Regular Staff	$ 4645	$
Casual (Unclassified) Staff		
TOTAL SALARIES AND WAGES		4645
TOTAL EMPLOYEE BENEFITS		
TOTAL TRANSPORTATION AND COMMUNICATIONS		
Insurance		
Sludge Haulage		
Repairs and Maintenance		
Other Services		
TOTAL SERVICES		398
Machinery and Equipment	1905	
Chemicals	73	
Utilities	1311	
Other Supplies and Equipment	1370	
TOTAL SUPPLIES AND EQUIPMENT		4659
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 9702

PROCESS DATA

FLOWS

WATER



PLANT PERFORMANCE

MONTH	FLOWS			RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM	
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS
				0	1 - 3	4 - 32	33 - 320	> 320				
JAN	4.53	.15	.30								16	5
FEB	3.66	.13	.15								16	1
MAR	4.17	.13	.16								23	18
APR	3.96	.13	.16								8	0
MAY	4.57	.15	.38								16	0
JUNE	4.84	.16	.25								16	0
JULY	5.29	.17	.32	1							19	0
AUG	4.09	.13	.23								12	0
SEPT	3.28	.11	.13								16	0
OCT	3.35	.11	.14								16	0
NOV	3.21	.11	.17								12	0
DEC	3.34	.11	-								0	-
TOTAL	48.29			1							170	24
AVG.		0.13	MAXIMUM .38	0 (NOTE - Average shown is the GEOMETRIC MEAN)								

WATER QUALITY

PROPERTY	RAW WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as $CaCO_3$	3	288	294	282	80 – 100
ALKALINITY in mg/l as $CaCO_3$	3	263	320	232	30 – 100
IRON in mg/l Fe	3	.12	.20	.10	Less than 0.3
CHLORIDE in mg/l Cl^-	3	50	120	13	Less than 250
pH in pH units	3	7.8	8.0	7.7	7.0 – 8.5